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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/957,463	09/21/2001	Andreas Ebert	1748X/50407	2591

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CROWELL & MORING, L.L.P.  
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Washington, DC 20044-4300

EXAMINER

KERNS, KEVIN P

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 12/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/957,463

Applicant(s)

EBERT ET AL.

Examiner

Kevin P. Kerns

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13 and 15-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13 and 15-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 September 2001 and 13 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-11, 13, and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isomura et al. (US 5,741,474) in view of Schuessler et al. (EP 0 878 442 (German text) – the applicants are also referred to equivalent US Patent No. 6,428,758 for translation purposes).

Isomura et al. disclose a process and apparatus for producing high purity hydrogen from hydrocarbons (including methanol) for a fuel cell system, in which the apparatus includes a plurality of chambers containing a catalyst 12 (reforming chamber

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11 is divided by hydrogen separating membrane 13, forming separated-gas chamber 14 with parallel channels); and a common evaporation unit (vaporization unit 10) rigidly connected and arranged on an edge region of the plurality of chambers (thermally conductive contact), such that the evaporation unit is in contact with the plurality of catalyst containing chambers (abstract; column 1, lines 6-12; column 2, lines 9-67; column 3, lines 11-47 and 56-67; column 4, lines 1-12 and 19-67; column 5, lines 1-67; column 6, lines 1-45; and Figures 1 and 2). Isomura et al. do not specifically disclose that the area of the evaporation unit is at least partially surrounded (such that the interface of contact is three dimensional) by the plurality of chambers.

However, Schuessler et al. disclose a reforming reactor and process of operating the reactor for producing high purity hydrogen from reforming of liquid hydrocarbons (including methanol) for a fuel cell system, in which the reactor includes a reactor housing 13 that contains a plurality of parallel chambers (6,7,10) containing and/or adjacent a catalyst layer 2; and a common evaporation unit (evaporation layer 1) in thermally conductive contact with the plurality of chambers (6,7), such that the evaporation unit 1 is arranged on an edge region of the chambers in a rigidly or movably connected manner and is entirely surrounded by chambers (6,7,10) in reactor housing 13, wherein the thermal conductive coupling varies with a temperature gradient in the evaporation unit as measured by temperature sensors (11,12), such that the advantage of at least partially surrounding the evaporation unit includes optimal evaporation under all operating states, including good dynamic behavior during load changes (abstract;

and Figure -- also see abstract; column 1, lines 11-27; column 3, lines 13-67; column 4, lines 1-58; column 5, line 3 through column 7, line 34; and Figure of US 6,428,758).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the evaporation unit for an apparatus for producing high purity hydrogen from hydrocarbons (including methanol) for a fuel cell system, as disclosed by Isomura et al., by using the surrounded evaporation unit in the reforming reactor, as taught by Schuessler et al., in order to provide optimal evaporation under all operating states, including good dynamic behavior during load changes (Schuessler et al.; abstract -- also see abstract; column 3, lines 36-61; column 4, lines 1-58; and column 7, lines 4-25 of US 6,428,758).

#### ***Response to Arguments***

4. The examiner acknowledges the applicants' amendment and replacement drawing sheet, both of which were received by the USPTO on October 13, 2004. The replacement drawing sheet, as well as amendments to the specification, overcome prior objections to the drawings. The amendment/remarks also overcome prior objections to the specification and rejections under 35 USC 112, 2<sup>nd</sup> paragraph. In view of the applicants' arguments, the prior rejections under 35 USC 102(b) and 102(a) have been overcome. However, new 35 USC 103(a) rejections are present in paragraph 3 above. The applicants have cancelled claims 12 and 14, and added new claims 15-18. Claims 1-11, 13, and 15-18 are currently under consideration in the application.

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5. Applicants' arguments with respect to claims 1-11, 13, and 15-18 have been considered but are moot in view of the new ground(s) of rejection.

**Conclusion**

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kevin P. Kerns whose telephone number is (571) 272-1178. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin P. Kerns *Kevin Kerns 12/12/04*  
Examiner  
Art Unit 1725

KPX  
kpk  
December 12, 2004